PATIENTS' HANDBOOK ON THE TREATMENT OF DIABETES MELLITUS

BY

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TO

MY WIFE AND MOTHER

WHOSE LOVE AND DEVOTION

HAVE BEEN AN INSPIRATION

ALWAYS

CONTENTS

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CHAPTER I

INTRODUCTION

At the earnest solicitation of many patients, I have written this book with the hope that the contained knowledge of the disease may be assimilated, and the book itself prove its worth many times as a ready source for information and reference.

In order that the diabetic patient progress, or maintain himself in equilibrium, it is absolutely necessary that he understand and appreciate his own condition; for only in this way is it possible to keep fit and avoid the pitfalls coincident to his malady.

To those five hundred thousand persons who come of diabetic stock, and are prone to develop the disease I ask to read chapter ten, in order that they, if possible, ward off the tendency to heredity.

To the general practitioner I offer this book

especially as a means of reference regarding dietetic measures: the contained list of diets being approximately correct.

From time to time clinical investigators and laboratory workers are presenting new evidences of their research on this disease. New theories are advanced to the profession as to its cause, while many remedies are advocated as being either beneficial or curative.

The facts set down in this book are those that have been accepted by the profession at large, and are the end result of many years of study and research. It is not my intention, or is it possible to embody in a work of this size the numerous views that exist regarding the diabetic phenomena; however, I shall as time advances, provided my efforts are rewarded by the request of my readers and personal patients, write a second edition which will go more into detail.

I may state that I am not in accordance with the present mode of treatment and although the contained views are accepted by the profession, the treatment of the disease is yet far from being on a firm basis. As I progress in my research on my serum and plant structures I shall from time to time present my findings in the medical journals, which will be finally bound and presented in book form.

CHAPTER II

HISTORICAL DATA

Solomon and Hirsch have given the best historical accounts of the disease.

Hippocrates made no reference to it in his writings. Celsus in the first century described a disease characterized by frequent urination (poly-uria), wasting and bodily weakness.

Aretæus (Circa 150 A.D.) was the first to use the term diabetes. He noted the thirst, urination, and striking emaciation. The writings of Galen indicate that he was familiar with the main symptoms of the disease.

The ancient Hindoo physicians of India are credited with being familiar with the sweet taste of diabetic urine. This characteristic is said by Hirsch to have been described in the Ayur Veda of Susruta, written in the sixth century. In a Cingalese treatise of the fifteenth century diabetic urine is referred to as "Modu mehe" or honey urine. Notwithstanding these references to the sweetness of urine, the credit for pointing out this characteristic is universally

attributed to Thomas Willis, who described it in his "Pharmaceutice Rationalis," published first in 1674.

It was not till a century later that Matthew Dobson of Liverpool demonstrated that the urine contained saccharine matter, by evaporating down two quarts of diabetic urine, and obtaining a cake of sugar weighing two ounces, two drams, and two scruples. He noted that the urine lost its sweet taste when it was fermented, and also stated that the blood serum was sweet.

Rollo's advocacy in 1797 of a meat diet in the treatment of diabetes marks an epoch in its history. He was also the first to give a detailed and intelligent account of the disease.

A great advance in the knowledge of the disease was furnished in 1889 by Minkowski and v. Mering, who demonstrated that a complete removal of the pancreas in various animals regularly caused a permanent diabetes.

CHAPTER III

PREDISPOSING FACTORS

ALTHOUGH diabetes is not as yet a common disease, statistics point to an increase in this country, which is probably due to our better understanding of the disease, greater accuracy in diagnosis, and preventative measures used to safeguard health.

The United States census for 1870 gave 2.1 deaths from diabetes per 100,000; 1880, 5.5; and for 1890, 9.3 per 100,000. In the year 1914, 16.2 per 100,000, and in 1915, 17.5 per 100,000. Thus if it continues to increase at the same rate as it has in the past fifty years it will rival Tuberculosis in its death rate and probably exceed it.

In 1900 there were 4,672 deaths from the disease in the United States, of which 2,650 were in males and 2,022 in females. Thus in this year the ratio of deaths from diabetes to the total number of deaths was 1 to 222. In 1914 there were 898,059 deaths in the United States from various causes, of which 10,666 were from diabetes. While in 1915 11,775 people died from diabetes.

Race.—The Hebrew race is particularly susceptible to the disease, which may be ascribed to their fondness for sweets, over-eating and sedentary habits, particularly amongst the better class.

Heredity.—Heredity is credited by many investigators as being a vital factor in the production of the disease. The author after reviewing many cases and histories believes that heredity plays its part more by environment and association than by actually being a predisposing factor. A son who is accustomed to see his father make a glutton of himself at the table places himself in an environment which is liable to lead to excesses favoring obesity, with its consequent complications in later life. This view was set forth in an article published in the *New York Medical Journal* March 29, 1919.

Infection.—There is no evidence available to substantiate the belief that diabetes is an infection, and it is generally believed that although it may be present in both husband and wife it was not contracted one from the other, unless it be according to the author's belief as expressed in the above paragraph.

Age.—No age is exempt. My youngest patient is a girl, three, while my oldest charge is past eighty-four. Most authors agree that the largest number of cases occur in the sixth decade, that is between fifty and sixty years of age. The incidence as to

decades in the Johns Hopkins Hospital series of 259 cases is shown in the following analysis:

Age...	1–10	11–20	21–30	31–40	41–50	51–60	61–70	71–80
	4%	14%	25%	43%	68%	75%	25%	5%

Sex.—Diabetes is more common in the male, the proportion being about four to three.

Class.—The disease has no respect for class and is seen equally amongst rich and poor.

Obesity.—Diabetes is very often found in those individuals who become obese during middle life. In many cases the obesity precedes the actual outbreak of diabetes. One author states that in over forty per cent. of 1063 cases, marked obesity was present. Generally the gain in weight is rapid. Individuals in the late thirties and forties who change their occupations and assume sedentary habits, often times due to lack of proper exercise and over indulgence in alcoholic beverages grow stout, the muscles become flabby and covered with layers of fat, which tend to limit the oxidation of carbohydrate (sugar) and sugar appears in the urine.

Nervous influences.—The author is of the firm belief that nervous strain, worry, etc., are factors worthy of consideration in the causation of the disease. I have known fright to cause sugar in the urine. From my medical histories I find many pa-

tients date the onset of the disease to a time when they were under nervous tension and undue strain due to family or business affairs.

Miscellaneous causes.—Diabetes has been known to follow injuries to the head, especially when there has been a fracture of the skull with pressure on the brain substance. Cases have followed typhoid fever, diphtheria, and rheumatism. Syphilis has caused a diabetes. During pregnancy a diabetic condition has been known to occur.

CHAPTER IV

THEORIES AS TO CAUSE

LIMITED space does not allow the discussion of all the various theories that have been advanced as to the cause of diabetes, consequently I shall discuss only those theories that have assumed importance.

Theory of over production.—Naunyn believes that hyperglycæmia (excess of sugar in the blood) is directly dependent on the fact that the liver and muscles of the diabetic are unable to store up glycogen (liver sugar) in the same way they do in health. The glucose derived from the ingested carbohydrates and proteids go to the liver and instead of being temporarily stored up as glycogen until required by the system, pass directly into the blood causing hyperglycæmia (excess sugar in the blood) and glycosuria (excess sugar in the urine). Von Noorden denies the over production of sugar but advances no conclusive evidence to support his contention.

Theory of under consumption.—A healthy individual on a mixed diet gives out less carbonic acid

than he receives of oxygen, the ratio being generally 9 to 10. This is expressed by the fraction 0.9 and is called the respiratory quotient. If there were an under consumption of glucose in the tissues we would expect the quotient to be much reduced. Cohnheim in 1903 found that muscle juice of cats when added to a solution of glucose, had no effect on the latter, when, however, the expressed juice of the pancreas was added to the mixture there was a rapid breaking up of the glucose into alcohol and carbonic acid. He concluded that in normal animals a glycolytic ferment results from the interaction of substances produced from the pancreas and muscles and that this is necessary for the combustion of glucose. The evidence afforded seems to justify us in suspecting that in health the pancreas and muscles and according to the author (other tissues cells) produce substances which by their interaction on each other yield a glycolytic (sugar splitting) body which is necessary for the proper combustion of glucose in the body.

Opie's theory.—Opie believes that diabetes is due to a degeneration in the pancreas of certain tissue called the Islands of Langerhans with a consequent loss of the internal secretion of the gland. As this condition is not found to exist in each and every case of diabetes that succumbs to the disease,

no conclusive evidence is available to corroborate the statement.

Author's theory.—Edgar believes that diabetes is a complication of chronic intestinal stasis. The toxins formed in the intestinal tract due to fermentation and putrefaction of carbohydrates and proteids cause as time advances a degeneration of the glandular structures, with a resultant retardation of function, causing the body to lose its power for the time being to care for its sugar content. Furthermore, he believes that diabetes is not primarily a disease of the pancreas but the entire ductless gland system, including the Adrenals-Thyroid-Pituitary-Pancreas, etc. This view set forth in 1919, *N. Y. Med. Jour.* Investigation is constantly pointing out the fact that other glands aside from the pancreas are vitally concerned in sugar metabolism; and it is a question in the author's mind whether we are not dealing with a cycle of events in which the liver, adrenals, pancreas, muscles, etc., all act in unison producing in combination a substance or substances which have the power to digest and allow the body to take care of its sugar content. When the secretion of one or more of these glands is interfered with or lacking in strength of its secretion the patient is declared to be diabetic.

CHAPTER V

DIAGNOSIS AND SYMPTOMS

BECAUSE of the fact that the urine contains traces of sugar on examination does not determine the fact that the individual is suffering from diabetes. Many conditions may cause the urine of normal persons to contain sugar, some of which are:

1. Over indulgence in foods containing high percentages of carbohydrate.
2. During pregnancy and lactation.
3. Nervous shock, hysteria, and various forms of insanity.
4. Injuries to the brain.
5. After the administration of various drugs.
6. Various conditions of the kidneys.

In order that a diagnosis of true diabetes mellitus be made it is necessary that the urine of a patient be examined more than once, on separate days while the patient is on a normal diet, and sugar being always present in variable quantity, all causes

such as the six mentioned above being eliminated.

Sugar in the urine is termed glycosuria, which may be either permanent or transitory, the former being an indication of true diabetes, the latter evidence of some indiscretion in diet, nervous disorder, etc. Thus in diabetes mellitus sugar constantly appears in the urine, unless the patient is under treatment, and is one of the cardinal symptoms. Most diabetics complain of various other symptoms which are fairly uniform and characteristic of the disease, namely,

Frequent urination.
Thirst.
Sweet taste in the mouth.
Weakness and loss of weight.

Frequent urination.—Is present in most if not all untreated cases, the amount of urine passed sometimes reaching large quantities. One case is recorded of a ten-year-old boy voiding 7200 cubic centimeters or about fifteen pints in fifteen hours. The boy weighed forty-one pounds and he eliminated in urine in fifteen hours thirty-nine per cent. of his weight.

Symptom of thirst.—Due to the great draining of the tissues by the large amount of urine passed thirst is produced and it is an ordinary sight to

see the diabetic patient drinking huge quantities of fluid.

Sweet taste.—As a result of the sugar circulating in the blood a sweet taste is oftentimes produced, the intensity of the sweetness being in direct proportion to the amount of sugar in the blood.

Weakness and loss of weight.—Due to the peculiarity of the disease in not allowing the patient to assimilate the sugar eaten he loses weight. As sugar is that foodstuff which produces heat and energy the body is cut off from this material, and as a result weakness becomes extreme especially in the legs. It is indeed commonplace to hear the diabetic say, "I feel all right but my legs are extremely weak." Thus all the manifestations of the disease are traceable to sugar starvation of the body, each and every symptom displayed being the direct result of this fact.

CHAPTER VI

MECHANICS OF DIABETES

EACH and every diabetic should appreciate the mechanics of the disease in order that he may understand its rational treatment.

The general value of carbohydrate food to the organism may be summarized as follows: (1) It furnishes a source of energy for the needs of the tissue cells, and particularly for muscular work. (2) Oxidation of sugar furnishes a constant supply of body heat: each gram of sugar yields four calories of heat. (3) The oxidation of sugar protects the protein of the body. (4) Any excess of carbohydrate taken as food beyond the power of the body to store as glycogen may be synthesized to form fat.

The sugar eaten in the food is oxidized in the tissues with the formation of carbon dioxide and water. Much uncertainty prevails as to the steps and means by which this is effected. The author believes the first step to be a breaking up of the carbohydrate into lactic acid, while the second step is

a cleavage into carbon dioxide and alcohol: thus far the reaction resembles that which takes place in alcoholic fermentation.

The sugar supply of the body is of great importance since any distinct increase in the blood causes hyperglycæmia which is promptly followed by sugar in the urine.

All diabetics have the power to digest or assimilate certain fixed quantities of sugar: this amount being dependent and in proportion to the severity of the disease. The amount of sugar that may be taken care of without its appearance in the urine is known as the assimilation limit, or point of carbohydrate tolerance.

This point may be determined in the following way: in a normal individual. Two hours after a breakfast consisting of a cup of coffee and two slices of bread, swallow 100 grams of glucose: if sugar is found in the urine it bears evidence that the person has diabetes or a strong tendency to develop it later on in life.

The ordinary healthy person eats in the diet about 400 grams of carbohydrate daily, while the diabetic seldom is able to assimilate one-quarter of this quantity without sugar appearing in the urine. The amount the individual is able to assimilate determines to some degree the severity of the case. An important fact to bear in mind is this: The per-

centage of sugar in the urine is not a good index as to the severity of the disease. I want to emphasize this fact, and if it will be remembered it will often stop lots of needless worry when you receive your urinalysis report. *Prognosis is based on the amount of sugar that can be assimilated.*

The excess sugar which is not utilized by the body passes into the blood, is carried to the kidneys and excreted in the urine as such. The amount excreted depending entirely on the amount of carbohydrate and protein ingested or manufactured from the body tissue: the latter condition being only present in severe diabetes.

The blood normally contains a certain percentage of sugar and ranges from .09 to .11. In diabetes the sugar content differs and may contain as high as .4 per cent.; this, however, is rather unusual and if present in this quantity the prognosis is indeed grave and is usually followed quickly by acidosis and diabetic coma. High blood sugars are usually seen in untreated cases and always signify impending danger. Under treatment it may fall to normal.

In diabetes the blood sugar generally rises to a maximum in one and a half to two hours, while the decline occupies eleven to twelve hours. This is quite different from the normal individual in which the decline is rapid, occupying two to three hours.

As a result of observations on the sugar content

of the blood, tests and measures have been devised which are capable of ascertaining the exact point of saturation of the blood, and we are now able to tell just exactly how many grams of sugar a patient may eat without increasing the blood sugar beyond a certain point. In other words, we know that before sugar appears in the urine, the blood sugar must assume a certain point of saturation, which is determined by frequent examination. Each individual suffering from diabetes has a different saturation point, up to which they are able to assimilate sugar without it appearing in the urine. If the blood sugar rises above this point it is indicative that sugar will appear in the urine. In this manner we have a check as to the amount of carbohydrate the individual is capable of taking: as sugar always appears in the blood in excess before it appears in the urine. Thus it is important in treating a case to make frequent examinations of the blood sugar.

CHAPTER VII

THE URINE IN DIABETES

THE amount of urine has been considered under symptoms. It is usually pale and clear. The quantity and pallor usually bearing a direct relationship to the percentage of sugar present. Occasionally I see diabetic urine of quite deep color and in these cases the quantity voided is usually small. Sometimes it possesses a syrupy consistency, and has a sweet taste, and in severe cases may have a sweetish fruity odor.

The specific gravity varies according to the percentage of sugar present. The higher the sugar content, the higher the gravity, and vice-versa. It usually varies between 1025 and 1040. A specific gravity of 1060 was seen by Naunyn, but this is exceedingly rare. I may state that I once saw a gravity of 1045. This urine contained seven per cent. sugar.

The most characteristic feature is the presence of sugar and the diagnosis is dependent on this symptom. This is almost invariably grape sugar (glucose, dextrose). The percentage varies greatly. In the

majority of cases it ranges about three per cent., in the severe cases five per cent. or over, although one case was reported by Higgins and Ogden of twenty per cent., this case being one of the traumatic type.

The amount of sugar excreted varies at different periods of the day: the period of minimum output is in the late night or early morning hours, while the maximum output is in the late morning and six o'clock in the afternoon, usually lasting to midnight.

Thus it is necessary that the percentage of sugar be determined from a sample of urine taken from the mixed twenty-four-hour amount. Knowing the total amount of urine, it is then easy to calculate the total amount of sugar excreted daily.

Many factors influence the sugar output, diet being the most important one. Infections and fevers often cause a decrease. In order that the patient know his limitations as to the intake of food it is advisable that he learn to analyze his urine, as in this way he constantly has his finger on his disease, so to speak, and is able to increase his sugar or decrease it as the analysis calls for.

The tests which my patients use are the following, and are the most essential in testing diabetic urine. I always have my assistant or office nurse instruct the patient as soon as he applies for treatment, so that he may make an analysis at frequent intervals during the time he is under my professional guidance.

Fehling's test for the presence of sugar.—Two separate solutions are necessary, one containing copper, the other an alkaline salt. Equal portions of both solutions are mixed and boiled in a test tube over an alcohol or Bunsen burner. A few drops of the suspected urine are added, drop by drop and then again heated. If sugar is present the solution changes color. A yellow or red precipitate indicates sugar.

Benedict's test.—To five cubic centimeters of the reagent add eight drops of the urine to be examined. The fluid is boiled and allowed to cool. If sugar is present a red yellow or green precipitate forms. This test is very delicate.

Quantitative test for the amount of sugar.—The fermentation test. Into a graduated U-tube, which may be purchased in the drug store, place as much urine as it will hold: invert the tube so that the urine will enter the upright arm of the tube; be careful to expel all bubbles. Into the mouth of the tube place one-quarter of a cake of fresh yeast which has been previously crumbled in the palm of the hand. Allow to stand in a warm dry place for twenty-four hours. The yeast ferments the sugar in the urine with the production of carbon dioxide gas which rises to the top of the tube, driving down the urine. The percentage of sugar may then be read according to the graduations on the tube.

Acetone test.—To five cubic centimeters of urine in

a test tube add a crystal of sodium nitro-prusside, acidify with glacial acetic acid; shake and make alkaline with ammonium hydrate. A purple color indicates acetone.

Di-acetic acid test.—To five cubic centimeters of urine in a test tube add an excess of a ten per cent. solution of liquor ferric chloride. A burgundy red color indicates the presence of di-acetic acid.

Apparatus necessary for testing the urine

One dozen test tubes
Alcohol burner
Fehling's solution
Benedict's solution
One-half ounce sodium nitro-prusside
One ounce of glacial acetic acid
One ounce ammonium hydrate
Two ounces ferric chloride
One fermentation tube
One cake Fleischmann's yeast
One test tube holder

CHAPTER VIII

COMPLICATIONS

The Skin.—Boils and carbuncles are very common. Their frequency is due to the susceptibility of the tissues to infection. The most common seats are the neck, back and buttocks. Owing to the irritation of the genitals by the saccharine urine, inflammation is common around the area of the vulva in the female and the penis in the male. This may be attended with intolerable itching, especially in women, where local boils are liable to develop.

Gangrene.—Diabetic gangrene occurs usually in individuals after fifty and is most common in the toes. It as a rule begins with a bluish discoloration, and then a blackening of the skin of the big or little toe. It either subsides being of the wet type or involves the whole foot or leg unless stopped by amputation.

Lungs.—One of the most common complications is Pulmonary Tuberculosis. In Naunyn's series of 149 pure diabetic cases it was present in 25, or 19 per cent. Peculiarly to state with the progress of the

tubercular process the glycosuria often diminishes or may entirely disappear.

Nervous system.—Neuritis may occur, as also cramps in the calves of the legs.

Special senses.—Of the ocular complications, cataract is the most common.

Sexual complications.—Menstruation in the female is often delayed or absent.

Diabetic coma.—This is the most important as well as the most serious complication. It is due to an acid auto-intoxication, caused by an excess of β-oxybutyric acid circulating in the blood. By its action on the respiratory center it causes the characteristic dyspnœa (shortness of breath), and from its effect on the brain coma supervenes. As acetone and diacetic acid are derivative products of β-oxybutyric acid, it is not surprising that we find them in the urine: thus if they are in the urine, it means also that β-oxybutyric acid is also present. Owing to the difficulty in performing the tests for β-oxybutyric acid we rely mainly on the ferric chloride test for diacetic acid to indicate that an acid intoxication is present. Their presence in the urine should always serve as a danger signal to approaching coma. There are, however, exceptions to this rule, some patients run a very heavy di-acetic acid reaction for months and years without developing coma.

The source of β-oxybutyric acid is due to the in-

complete oxidation of the fats of the body, as well as those of the food. The relative amounts of acetone, di-acetic, and β-oxybutyric acids vary in different stages of the disease. The first to appear is acetone, and it may often be noticed from the breath of a diabetic as a sweet fruity odor. Di-acetic secondly makes its appearance, and lastly β-oxybutyric acid. These changes are due to the gradual diminution of the power of oxidation in the body. When body metabolism is built up, the acetone bodies disappear in the inverse order in which they make their appearance.

The addition of moderate amounts of carbohydrate to the diet cause a diminution in the excretion of acetone as well as oxybutyric acid when they are present. Their withdrawal causes an increase. Thus the author feels that when the capacity for oxidation in the body is not too much lowered the presence of moderate amounts of carbohydrate in the food aids in the oxidative process and protects from destruction the fats which are the main source of the acetone bodies. This may be also said of alcohol. The excessive feeding of fats seems to be a frequent cause for an increase in these bodies.

The symptoms of diabetic coma come on slowly as the acid increases in the blood. The individual becomes drowsy and sleepy, and MAY suffer from nausea. The extremities become cold, the hands and

face livid: the respirations become quickened but shallow, drowsiness becomes profound and coma supervenes. The collapse is generally due to cardiac failure due to the action of the acid on the heart muscle. I have noticed that during impending coma there is a great loss of weight noted, and when the patient sinks into coma the loss increases to an alarming extent and is out of all proportion to expectation.

Certain factors predisposed to coma: among these are constipation, onset of various complications, such as carbuncle, subjection to an operation, if the patient is not prepared for the ordeal by a medical adviser who is skilled in metabolic treatment, and sudden changes in diet.

A large percentage of deaths in diabetes is due to coma but should not be, in the light of present day treatment. The cases that succumb to this cause may be said in the great majority of cases to have received poor treatment. Of Naunyn's 44 fatal cases 19 died in coma: Frerichs reported 150 deaths from coma out of a total of 250 fatal cases. These figures were compiled some time ago and therefore must not be taken as the standard for to-day.

CHAPTER IX

PROGNOSIS

In order that a prognosis be made on any case of diabetes it is necessary that the patient be observed for a long period of time.

Due to the greater accuracy in diagnosis, coupled with the more frequent discovery of the disease now than in the past, speaking generally the prognosis is better to-day than it ever has been before, and because an individual is a sufferer from the malady it is not an essential that he consider himself or herself an invalid.

All depends on sensible, scientific medical care, coupled with the willing co-operation of the patient. No physician, no matter how capable, can help the diabetic unless he co-operate to the fullest extent and carry out his advice to the last letter.

Cases that I have seen in consultation, who were declared to be severe ones, under observation and rational treatment have often proved to be mild, and have responded quickly to my methods.

The frequent changing of one's physician is a bad

practice and in no way conducive to health and longevity. The diabetic in selecting a medical adviser, does well to place himself in the hands of a physician skilled in diabetic work, for only the man seeing many cases daily can push you on by the scientific application of his knowledge gained by intercourse and study of many and varied cases.

The presence of a cheerful, brave and honest disposition, coupled with a sincere able medical adviser, are important factors necessary in order that a diabetic patient reach the paramount goal of his ambition.

CHAPTER X

PROPHYLAXIS AND PREVENTION

In families in which there is a predisposition to diabetes, precautionary measures should be instituted early to ward off the tendency of developing the disease later on in life. Prevention is always better than cure.

I have made it a rule to examine the urines of the entire family if the father or mother have the disease, in order that I may in this way detect the malady if it is present in the younger members, and thus if sugar is present start treatment early: If the urines are negative but show that the patient has a low tolerance I recommend dietary measures to prevent overtaxing of the system.

I have been using a test which predetermines the predisposition to diabetes. It is performed in the following way. A specimen of urine is diluted to a gravity of 1012 by the addition of distilled water, 7 c.c. of a 15 per cent. solution of sodium hydroxide, are shaken up once with 20 c.c. of urine, 3 c.c. of a solution of copper sulphate (138.78 grams of $CuSO_4$

to 1000 c.c. of water) are added and shaken for ten minutes. This is filtered through filter paper. The first ten drops or so are thrown away while the remainder of the filtrate is collected in test tubes of uniform size. In the healthy, the fluid is only very little discolored, but in the diabetic it is of a pronounced bluish tint.

The author is of the firm belief that diabetes is not inherited, although the tendency may be. My histories on cases lead me to believe that environment has more to do with the real production of the disease than heredity in those whose family histories present the evidence of diabetes.

In these families there is often a tendency to corpulency acquired by over-eating. The children of the family are brought up in an atmosphere of gluttony. They have daily seen their parents storing away huge quantities of food, and often of a variety that is rich in sugar. These children automatically assume this attitude of over-indulgence and grow over-weight: this coupled with the inherited tendency of the disease may produce definite symptoms as they grow older if these habits are not corrected. There is no strong evidence to prove that diabetes is directly due to over-indulgence in sugar, yet the more one sees these obese cases with their history of over-indulgence in candy, pies, cakes, etc.,

the more he believes this to be a cardinal factor in the production of the disease.

Food is meant to be eaten in reasonable quantity: just so much may be digested and assimilated by the human organism while the rest simply acts as excess luggage undergoing fermentation and putrefaction in the large intestine with the production of poisonous toxins which stagnate and retard all the vital functions of the body glands. As a result fat is deposited throughout the body which materially interferes with normal action: secretions are lessened, muscular action becomes sluggish, resistance is lowered and the individual places himself in a receptive condition for the development of diabetes.

If you come of diabetic stock, it is advisable without loss of time to test your tolerance for sugars in order that any tendency to develop the disease may be diagnosed and measures instituted to prevent the progression.

A simple procedure used by the author to test tolerance is performed as follows: On an empty stomach swallow one hundred grams of glucose. If glycosuria result it may be concluded that the assimilation for carbohydrates is lowered; for a normal person may take from 180 to 250 grams without sugar appearing in the urine.

In those members who show a lowered assimilation

limit it is wise to restrict the carbohydrate in the food. Candy, cakes, pies, potatoes, etc., as shown in the diet lists in the back of the book, SHOULD BE REDUCED TO A MINIMUM, while those foods containing an excess of fat and protein should be indulged in.

The amount of food eaten of course depends on the weight of the individual and the kind of work he does. A person doing moderate work needs about forty calories per kilogram of body weight. Thus, if a man at moderate work weighs 70 kilograms (154 pounds), his diet should contain approximately 2800 calories; if he weighed 60 kilograms, 2400 calories or forty calories per kilogram of body weight. If the individual follow a sedentary occupation he requires less, about 2100 calories, or 30 calories per kilogram of body weight. By a calorie is meant the heat necessary to raise the temperature of one kilogram of water one degree centigrade.

Because either of your parents suffered from diabetes it does not mean that you will. It does mean, however, that you are susceptible by virtue of the inherited tendency, and it behooves you to take steps to safeguard the health you now possess, and prevent by dietetic and hygienic measures the susceptibility of development.

The normal individual eats approximately 400 grams of carbohydrate daily: 100 grams of protein,

and 100 of fat. These quantities of the three main foodstuffs are not taken at once, but are distributed throughout the twenty-four hours and divided usually into three meals.

These individuals with lowered tolerance should consult the tables in the back of the book, reducing to a minimum their carbohydrate intake. Abstenance from the use of alcohol is advised as it produces obesity, irritates the kidneys, and often causes hardening of the arteries if taken without the advice of a physician.

CHAPTER XI

TREATMENT OF DIABETES

THE treatment of diabetes will be considered under four headings: Hygienic—dietetic—medicinal and the treatment of complications.

Hygienic.—It is of tremendous importance that the patient be particular regarding personal hygiene. Daily baths assist materially in keeping the skin functions active, and diminish the liability of furunculosis. By cleanliness the distressing itching (pruritis) may be partially alleviated. To the thin diabetic with the dry harsh skin, the luke warm bath is often soothing. The more robust patients can stand a cold bath. An occasional Turkish bath is useful in the obese cases, as it is a partial substitute for massage. Light woollen underwear should be worn. Moderate exercise should be taken, as a certain amount of muscular activity favors sugar combustion. Violent exertion should be avoided in the severe cases as it tends to induce coma. Massage is useful as it tones up the muscular system, and thus probably aids carbohydrate combustion.

All sources of worry and anxiety should be eliminated as much as possible. More or less obstinate constipation is the rule in diabetes, and it is of the utmost importance that this be corrected as persistent constipation is unquestionably in severe cases the cause of coma.

Dietetic.—As the diabetic is only able to assimilate a certain quantity of sugar, the symptoms of diabetes are directly dependent on the sugar circulating in the blood, the grade of which is fairly accurately indicated by the amount of sugar excreted in the urine. The object therefore is to eliminate high sugar saturation of the blood (hyperglycæmia). The most rational way to undertake this procedure is to limit the intake of carbohydrate, or by graduated diet ascertain just how much sugar the patient may take care of without it appearing in the urine.

Modern treatment has as its primary aim the establishing of a sugar equilibrium, that is an equilibrium between the sugar ingested and the sugar excreted. For instance, if a patient is taking 50 grams of carbohydrate daily and excretes 50 grams he is in positive equilibrium: If he excretes 55 he is in negative equilibrium and is manufacturing 5 grams from his own body tissue.

It is a positive fact that starvation will rid a patient of sugar far quicker than any other method, especially by diminishing the diet as was the custom

up till a few years ago. By starvation the liver is drained of its glycogen (stored up sugar), as well as the muscles, and the urine becomes sugar free in a very short time, depending of course on the severity of the case. It has been definitely stated that starvation is in no way injurious to the patient, and does not as was at first supposed produce coma by the formation of acid, if scientifically applied by a competent physician.

The author, however, feels that the frequently starved diabetic who has grown weak and emaciated from numerous applications of starvation, is not a good subject for this continued treatment, and thoroughly advises the discontinuance of this practice in this class of case. In a paper published in the April number of the *New York Medical Journal* an article appeared by the author entitled "The Limitation of Starvation in the Treatment of Diabetes Mellitus."

These thin emaciated individuals, some of them cadaverous in appearance, and hardly able to sustain their own puny weight, are already drained of resistance, and if starved again they lay themselves open to any intercurrent infection or disease: secondly, starvation in these cases has been known to actually cause glycosuria. On this account and others the author allows the ingestion of small quantities of carbohydrate and protein, in order that

they may maintain themselves, till a point is reached where some of the bodily strength is regained. This treatment is not to be practiced by the patient and is only to be applied by a physician appreciating existing conditions, with a thorough knowledge of urinalysis, and the ease by which these patients develop alarming symptoms.

Before describing the actual diabetic treatment it may be of interest to call attention to what I term the Healthy diabetic. By this term, I mean the man who knows he has diabetes, yet ignores treatment. You all know one or more. He has probably lived in the neighborhood for years: always looks healthy and stout, with ruddy complexion. He goes to business daily, and eats most everything. No doubt you have often said to yourself: Why starve myself, lose weight and always feel miserable, when Mr. X eats everything and is happy and healthy. Mr. X may continue to ignore medical science for a period, but some day he will complain of feeling drowsy, his respirations will increase, and he will go into diabetic coma due to accumulation of β-oxybutyric acid in the blood, and in a short time he will be a dangerously sick man with a slim chance for recovery. If he had received sane treatment at the beginning of his disease and observed the simple rules laid down by his medical adviser he might have avoided this unfortunate and early demise. The

healthy diabetic is only healthy looking, and is like unto the rosy apple with the decayed center: looks good from the outside.

Sensible treatment is life insurance to the diabetic and if conscientiously applied is productive of great good in indefinitely prolonging longevity. It is therefore imperative that the patient first place himself in the hands of a physician who may apply rational treatment, instructing the individual how to analyze the urine, prepare the food, etc. For it is only in a practical way that the patient may gain the necessary knowledge to carry himself along in the years to come when he must be dependent to a great extent on his own knowledge.

It is more advisable for the early diabetic to go to an institution, for here he is really taking a course in the treatment of the disease, which knowledge will stand him in good stead after discharge. Here we will have impressed the essential points: understand what a gram, a calorie means: even little children I have had under my care take an interest in urinalysis. I have one child only five who is able to do both the Benedict's and di-acetic acid reactions with real accuracy.

Roughly stating, we may say the normal individual eats about 2500 calories in food value daily, or forty calories per kilogram body weight. A kilogram being approximately 2.2 pounds avoirdupois.

By a calorie is meant the heat necessary to raise the temperature of one kilogram of water four degrees Fahrenheit. The heat liberated by the various foodstuffs is shown below.

One gram	*Calories*
Carbohydrate	4
Protein	4
Fat	9
Alcohol	7

The caloric needs of the body vary from day to day, depending on the amount and kind of work, temperature, etc. It may be interesting to state that the expenditure of one calorie of heat is required to raise from a sitting position in front of a door, turn the key in the door and sit down.

The ordinary diet for a man at moderate work should contain approximately 400 grams of carbohydrate, 100 grams of protein, and 100 grams of fat. This contains 2900 calories or forty calories per kilogram of body weight in an individual weighing 70 kilograms. Thus approximately 55 per cent. of the energy of the entire diet of the normal individual consists of carbohydrate. While the total carbohydrate in the diet of the diabetic is almost invariably restricted and seldom exceeds 100 grams, or a decrease of 25 per cent. of the normal ration.

The quantity of carbohydrate in the various foods

is easily calculated and far more simply than is usually thought. Tables have been compiled and values recorded which may be used by the diabetic for reference, as the amount of carbohydrate, protein and fat each food contains.

The diabetic who weighs his food accurately is far better off than the one who guesses weights and quantities, and it is strongly advised that you procure scales, and graduated receptacles in order that accuracy be maintained; for it is only in this way that your tolerance will increase and be maintained. In the latter pages of this book I have grouped the various foodstuffs in reference order, along with a list of graduated diets used in the Massachusetts hospital in their treatment of the disease.

A thorough examination of the twenty-four-hour specimen is made on the beginning of treatment in order to ascertain definitely the amount of sugar present, presence of acetone, di-acetic acid and the other important constituents of the urine. Blood sugar both on an empty and a full stomach is recorded.

The patient is kept on an ordinary diet for forty-eight hours after entering the hospital in order that observations be made while on a normal diet. If the patient is obese or aged, or is a long standing case, fat is first omitted from the diet, after two days protein, and then the carbohydrates are halved,

until the patient is taking only ten grams, then fast is begun.

In obese cases it is unwise to starve immediately, as an active ketonuria (acidosis) very often follows this procedure. In other uncomplicated cases fasting is instituted immediately.

The patient is to be fasted till sugar free; the time necessary differing in each case. Generally the urine becomes SUGAR FREE IN FROM TWENTY-FOUR TO FIFTY-SIX HOURS. The urine during this time is examined twice daily for sugar, di-acetic acid, and acetone, and if the facilities permit the ammonia content of the urine is estimated.

It is unwise to fast more than four days. If glycosuria persist at the end of four days it is advisable to give one gram of protein or 0.5 gram of carbohydrate per kilogram of body weight for two days, then fast again for three days unless earlier sugar free. If sugar persists in the urine repeat the above procedure, then fast for one or two days as necessary.

During the period of starvation, allow plenty of water, tea, coffee without milk, and thin clear meat broths as desired. If the patient is an adult one ounce of whiskey every three hours may be allowed: it will act as a stimulus, and make the patient feel more comfortable.

When the patient is sugar free, by that I mean the twenty-four-hour specimen, I start them off by giving five grams of carbohydrate in the form of 150 grams of the five per cent. vegetables, and continue to add five or ten grams daily up to 50 grams, or till sugar appears.

When the urine is sugar free for three days add about twenty grams of protein and thereafter 15 grams daily in the form of egg white, fish, or lean meat (chicken) until the patient is receiving 1 gram of protein per kilogram of body weight. (Kilogram is 2.2 pounds.)

It is inadvisable to allow any fat till the protein reaches one gram per kilogram of body weight, unless the protein tolerance is below this figure, and the carbohydrate tolerance has been determined, but then add 5 to 25 grams daily, according to previous acidosis until the patient ceases to lose weight or receives in the total diet 30 calories per kilogram body weight.

The return of sugar demands fasting for twenty-four hours or UNTIL SUGAR FREE. Resume the former diet, gradually adding fat last in order to maintain as high a carbohydrate tolerance as possible, sacrificing body weight for this purpose. Whenever the tolerance is less than 20 grams of carbohydrate, fasting should be practiced one day in

seven. When the tolerance is over 20 grams, cut the diet in half one day each week.

The foods used in determining the tolerance for carbohydrate are the five per cent. vegetables.

It is easier to prevent acidosis than to treat it. Thus is preparation for fasting advisable. The majority of patients show little acidosis on fasting (if properly prepared) or if this has been present it may disappear.

During the period of fasting patients should not be kept in bed. Plenty of diversion should be afforded, such as writing, reading, visits from friends and walking short distances. During the first day patients generally complain of feeling tired and should be allowed rest in bed, till this feeling passes off.

As a general rule, during the period of fasting the patient will lose weight, but this is not always true. As the diet is increased and the calories mount up, a gain in weight is noticeable, which is fairly constant and progressive. The obese diabetic may lose weight and feel justified as to its occurrence. I have found that the free use of salt is advisable during treatment. It helps the body tissue retain water and helps the patient to retain his weight. Should swelling of the extremities occur, the water and salt intake should be reduced to a minimum.

Every effort should be used to conserve energy in diabetes. These patients should avoid low temperatures as well as rapid reductions in body heat; such as automobiling and cold baths. As soon, however, as sufficient calories can be given and the body by treatment is brought back to good physical condition, the necessity for these precautions disappears.

Patients should never indulge in ice water, as it must be raised to body temperature before it is absorbed. The amount of energy expanded in warming this water is considerable. It takes 81 calories to raise three quarts of water from 50 degrees Fahrenheit to body temperature (98.6 degrees).

The medicinal treatment of diabetes.—The employment of drugs by the medical profession is far too common in the treatment of diabetes. Thousands of patent medicines are advertised and used for the cure of the disease: none have ever produced any lasting results, while some are even dangerous and detrimental to the health of the patient. I use none of them, and absolutely forbid my patients indulging in any proprietary medicine without my consent, which is only obtained when I know the contents of the preparation, and have made a careful analysis. I am open minded, and am willing that my patients shall have the advantage of tak-

ing any preparation that is of actual worth in the treatment of the disease.

I have been using for the past year a serum derived from the blood of rabbits which is meeting with success, but before any conclusions may be reached as to the permanent result, years must pass, and the patients be carefully studied. Along with this research I am using an infusion derived from a plant which grows in southern Italy during the month of December and January: it is a member of the nettle group. Its action is to increase oxidation in the body so that the sugar disappears from the urine. It is evidently of very great value in the treatment of diabetes.

Substitutes for sugar.—The best preparation is saccharine; but it is more advisable for the patient to forget the sweet taste, learning to depend on the natural flavors of the fruits and vegetables. If saccharine is used, the food should not be heated after its addition, as it renders them of bitter taste.

Treatment of complications.—Complications in diabetes are never to be considered trivial matters, and should never be treated by the patient personally. If complications arise it necessarily denotes that your sugar equilibrium is out of adjustment. It must be remembered that due to lowered resistance the diabetic subject is more liable to de-

velop illnesses of all sorts than the individual who is normal, and for this reason is subject to all diseases that may be prevalent, such as La Grippe-Influenza, the infections, diarrhœa, etc.

Consult your physician immediately if you are not feeling well and you will be amply repaid. Neglect medical advice and you will suffer accordingly.

If by chance you are away from home and become ill so that it is necessary to consult a strange physician, immediately state to him the fact that you are a diabetic so that he may take this into consideration when prescribing.

Last, but most important: If at any time an excess of acid is present in the urine do not undergo starvation in order to render the urine sugar free without the advice of a competent physician. If a physician is not available, first cut down the fats, then decrease the carbohydrates by half. In this way the reduction in the fat sparing foods is reduced slowly and there is no great danger of exciting ketonuria. Sudden starvation when acid is present in the urine has been often the cause of its being aggravated instead of lessened. I am very fond of prescribing alcohol when the diet is being reduced as it acts splendidly as a fat sparer, aside from its being of direct value as a food.

CHAPTER XII

DIET TABLES

THE following diet tables have been compiled by Hill and Eckman and are used extensively at the present time. I quote them as follows:

The diet tables may be used as graduated series by following them in the order given below. It is not always either necessary or advisable to increase the food allowance each day. The physician must decide whether the patient should be advanced rapidly or cautiously, and must direct when he shall take regular days of abstenance, when to go back to the beginning and rebuild anew, and at what point to stop the carbohydrate increase or maintain a constant level of each food element.

It is at the constant level that the patient is discharged from the hospital, and then is the time to study the use of the recipes hereinafter given. The quantities of material to be used must be learned from the diet tables.

When the tolerance for carbohydrate is greater than 35 grams, substitute the fifteen per cent. vege-

tables for an equivalent weight of the five and ten per cent. vegetables. Do not add more than one high carbohydrate food per day, and give this carbohydrate in divided portions, never an over supply in any one meal.

A good way of using oranges or grape fruit is to take half the portion at 10.30 a. m. and the remainder at 2.30 p. m., thus sparing the tissues an over influx of sugar at any one time.

Fruit drinks sweetened with saccharine may be used. Coffee shakes will be an aid in using cream.

When the patient misses the taste of bread, bran cakes may be used. Remember the food value if the patient desires to take many of them. Use ordinary stable bran and not bean flour.

It has been estimated that four-tenths of the carbohydrate will go into solution when such vegetables as carrots, and parsnips, et cetera, are cut into pieces and boiled. With changes of water and smaller pieces even more of the sugar content will be lost.

Graduated series of diet tables

Series I.....Weight of patient 40 kilograms (88) pounds. Use tables I to XVI.

Series II....Weight of patient 50 kilograms (110 pounds). Use tables I to V, inc., and tables XVII to XXIII, inc.

Series III...Weight of patient 60 kilograms (132 pounds). Use tables I to V, inc., tables XVII and tables XXIV to XXXI, inc.

Series IV...Weight of patient 70 kilograms (154 pounds). Use tables I to V, inc. Tables XVII, XXIV, and tables XXXI to XLII, inc.

Series V....Weight of patient 80 kilograms (176 pounds). Use tables I to V, inc., table XVII, table XXIV, table XXXI and tables XLIII to XLVIII, inc.

TABLE I

Breakfast

Asparagus..... 50 grams—1 h tbsp.
Broth.....
Tea or coffee

Dinner

Spinach..... 50 grams
Broth
Tea or coffee

Supper

Stewed celery..... 50 grams
Broth
Tea or coffee

TABLE II

Breakfast

String beans.....150 grams—3 h. tbsp.
Broth
Tea or coffee

Dinner

Cabbage.....150 grams
Broth
Tea or coffee

Supper

Asparagus.....150 grams
Broth
Tea or coffee

TABLE III

Protein.....24 grams	Fat...22 grams
Carbohydrate.. 8 grams	Calories.336

Breakfast

String beans.....100 grams—2 h. tbsp.
Egg..... 1
Coffee

Dinner

Egg..... 1
Turnips.....100 grams—2 h. tbsp.
Cabbage.....100 grams—2 h. tbsp.
Tea

Supper

Egg..... 1
Turnips.....100 grams—2 h. tbsp.
Spinach.....100 grams—2 h. tbsp.

TABLE IV

Protein.....31 grams	Fat.....17 grams
Carbohydarte..19 grams	Calories.363

Breakfast

Egg..... 1
Asparagus.....100 grams—2 h. tbsp.
Tomatoes.....100 grams—2 h. tbsp.
Coffee

Dinner

Chicken (minced)..... 35 grams—1 sm. serv.
String beans.....200 grams—4 h. tbsp.
Cabbage (cooked).....100 grams—2 h. tbsp.
Tea or coffee

Supper

Egg.....240 grams—4 h. tbsp.
Cauliflower.....100 grams—2 h. tbsp.
Tea or coffee

TABLE V

Protein.....39 grams Fat..... 22 grams
Carbohydrate..16 grams Calories.430

Breakfast

Egg..... 1
Asparagus.....200 grams— 4 h. tbsp.
Coffee

Dinner

Chicken..... 70 grams—1 med. serv.
Cauliflower.....120 grams—2 h. tbsp.
Cabbage (cooked).....100 grams—2 h. tbsp.
Tea

Supper

Egg..... 1
String beans.....100 grams—2 h. tbsp.
Spinach.....200 grams—4 h. tbsp.
Tea

TABLE VI

Protein.....37 grams Fat..... 31 grams
Carbohydrate..13 grams Calories.493

Breakfast

Egg..... 1
Asparagus.....100 grams—2 h. tbsp.
Coffee

Dinner

Steak.....100 grams—1 sm. serv.
Celery (cooked).....100 grams—2 h. tbsp.
Tea

Supper

Egg..... 1
Lettuce..... 20 grams—2 medium leaves
Cucumbers.....100 grams—2 h. tbsp.
String beans..... 50 grams—1 h. tbsp.
Tea

TABLE VII

Protein.....37 grams	Fat..... 36 grams
Carbohydrate..16	Calories.552

Breakfast

Egg..... 1
Asparagus.....100 grams—2 h. tbsp.
Spinach.....100 grams
Coffee

Dinner

Steak.....100 grams
Turnips.....140 grams
Spinach.....100 grams
Cabbage.....100 grams
Tea

Supper

Spinach.....100 grams
String beans.....100 grams
Cauliflower.....120 grams
Tea

TABLE VIII

Protein.....42 grams	Fat..... 37 grams
Carbohydrate..15 grams	Calories.578

Breakfast

Egg..... 1
Asparagus.....100 grams
Spinach.....100 grams
Coffee
Cream (heavy)..... 1 tbsp.

Dinner

Steak.....100 grams
Turnips.....140 grams
Celery.....100 grams
Cabbage.....100 grams
Tea

Supper
- Egg..... 1
- Egg white..... 1
- Spinach.....100 grams
- String beans.....100 grams
- Cauliflower.....100 grams
- Tea

TABLE IX

Protein.....40 grams — Fat..... 42 grams
Carbohydrate..20 grams — Calories.636

Breakfast
- Orange..... 50 grams
- Egg..... 1
- Spinach.....100 grams
- Cream..... 1 tbsp.
- Coffee

Dinner
- Egg..... 1
- Steak..... 50 grams
- Cabbage.....100 grams
- Onions.....100 grams
- Cream..... 1 tbsp.
- Tea

Supper
- Scraped beef balls..... 40 grams
  Mixed with one egg white
- Chopped celery salad.....100 grams
- Tomatoes.....100 grams
- Tea

TABLE X

Protein.....40 grams — Fat..... 40 grams
Carbohydrate..20 grams — Calories.614

Breakfast
Orange..... 50 grams
Egg..... 1
Cauliflower.....120 grams
Butter..... 8 grams
Cream..... 1 tbsp.
Coffee
Dinner
Cod or haddock.....100 grams
Tomatoes.....100 grams
Turnips.....140 grams
Butter..... 8 grams
Tea
Three P. M.
Orange..... 50 grams
Supper
Egg..... 1
Egg white..... 1
Celery.....100 grams
Asparagus.....100 grams
Butter..... 8 grams
Tea

TABLE XI

Protein.....40 grams Fat..... 40 grams
Carbohydrate..25 grams Calories.638

Breakfast
Orange.....100 grams
Egg..... 1
Tomatoes.....100 grams
Cream..... 1 tbsp.
Coffee
Dinner
Steak..... 50 grams
Cabbage.....100 grams
Spinach.....200 grams
Butter..... 5 grams
Tea

Supper

Scraped beef balls..... 40 grams
Celery.....100 grams
Onions.....100 grams
Tea

TABLE XII

Protein.....40 grams Fat..... 38 grams
Carbohydrate..30 grams Calories.638

Breakfast

Orange.....100 grams
Egg..... 1
Asparagus.....100 grams
Cream..... 1 tbsp.
Coffee

Dinner

Chicken..... 80 grams
Cabbage.....100 grams
Cauliflower.....120 grams
Cucumbers.....100 grams
Tea

Supper

Egg..... 1
String beans.....100 grams
Peas.....100 grams
Turnips.....140 grams
Butter..... 10 grams
Cream..... 1 tbsp.
Tea

TABLE XIII

Protein.....40 grams Fat..... 40 grams
Carbohydrate..35 grams Calories.687

Breakfast

Orange.....100 grams
Egg..... 1
Spinach.....100 grams
Cream..... 1 tbsp.
Coffee

Dinner

Cabbage..... 25 grams
Tomatoes..... 25 grams
Turnips..... 25 grams
Celery..... 50 grams
Steak.....100 grams
Squash..... 50 grams
Tea

Supper

Egg..... 1
Turnips.....175 grams
Celery.....100 grams
Peas..... 75 grams
Tea

TABLE XIV

Protein.....41 grams Fat..... 63
Carbohydrate..36 grams Calories.901

Breakfast

Egg..... 1
Peas..... 75 grams
Tomatoes.....100 grams
Butter.....
Cream..... 1 tbsp.
Coffee

Dinner

Broth
Halibut.....100 grams
Turnips.....200 grams
Squash..... 70 grams
Butter
Cream..... 1 tbsp.
Tea

Supper

Oysters..... 75 grams
Celery.....100 grams
Beets.....100 grams
Cabbage..... 25 grams
Butter
Cream..... 1 tbsp.
Tea
Allow during the day 40 grams of butter.

TABLE XV

Protein.....42 grams Fat..... 91 grams
Carbohydrate..35 grams Calories.1148

Breakfast

Grapefruit..... 75 grams
Bacon..... 50 grams
Parsnips.....100 grams
Cream..... 1 tbsp.
Coffee

Dinner

Broth
Lamb chop.....100 grams
Cabbage.....100 grams
Celery.....100 grams
Grapefruit..... 75 grams
Cream..... 1 tbsp.
Tea

Supper

Egg..... 1
String beans.....200 grams
Cucumbers.....100 grams
Parsnips.....100 grams
Cauliflower.....120 grams
Butter..... 10 grams
Cream..... 2 tbsp.
Tea

TABLE XVI

Protein.....42 grams	Fat..... 114 grams
Carbohydrate..36 grams	Calories.1379

Breakfast

Orange	50 grams
Bacon	50 grams
Asparagus	100 grams
String beans	100 grams
Butter	
Cream	2 tbsp.
Coffee	

Dinner

Roast beef	75 grams
Beets	100 grams
Cauliflower	120 grams
Butter	
Tea	

Supper

Bacon	50 grams
Celery	100 grams
Peas	100 grams
Brussels sprouts	100 grams
Butter	
Cream	1 tbsp.
Tea	

Allow during day 35 grams of butter.

TABLE XVII

Protein.....50 grams	Fat..... 40 grams
Carbohydrate..20 grams	Calories.659

Breakfast

Egg	1
String beans	125 grams
Cream	1 tbsp.
Coffee	

Ten A.M.
Orange..... 50 grams
Dinner
Broth
Fish (cod).....125 grams
Brussels sprouts.....100 grams
Olives..... 20 grams
Butter..... 5 grams
Tea
Supper
Egg..... 1
Egg white..... 1
Spinach.....100 grams
Butter..... 5 grams
Cream..... 1 tbsp.
Tea

TABLE XVIII

Protein.....50 grams Fat..... 40 grams
Carbohydrate..25 grams Calories.659

Breakfast
Grapefruit..... 75 grams
Eggs..... 2
Asparagus.....100 grams
Cream..... 1 tbsp.
Coffee
Dinner
Broth
Chicken..... 80 grams
Cauliflower.....120 grams
Grapefruit..... 75 grams
Butter..... 5 grams
Cream..... 1 tbsp.
Tea

Supper
Cold roast veal..... 50 grams
Tomatoes.....150 grams
Butter..... 5 grams
Cream..... 1 tbsp.
Tea

TABLE XIX

Protein.....51 grams Fat..... 41 grams
Carbohydrate..32 grams Calories.721

Breakfast
Egg..... 1
Egg white..... 1
Peas.....100 grams
Cream..... 1 tbsp.
Coffee

Ten A.M.
Orange.....100 grams

Dinner
Broth
Lean steak..... 75 grams
Onions.....100 grams
Butter..... 5 grams
Cream..... 1 tbsp.
Tea

Supper
Egg..... 1
Egg white..... 1
Celery stewed.....100 grams
String beans.....100 grams
Cream..... 1 tbsp.
Tea

TABLE XX

Protein.....51 grams Fat..... 43 grams
Carbohydrate..36 grams Calories.756

Breakfast
- Grapefruit ..... 75 grams
- Egg 1
- Egg white 1
- Asparagus ..... 100 grams
- Cream ..... 1 tbsp.
- Coffee

Dinner
- Broth
- Roast beef ..... 75 grams
- Beets ..... 100 grams
- Lettuce ..... 50 grams
- Cucumbers ..... 100 grams
- Cream ..... 1 tbsp.
- Tea

Supper
- Egg 1
- Egg white 1
- Spinach ..... 100 grams
- Asparagus ..... 100 grams
- Grapefruit ..... 75 grams
- Butter ..... 10 grams
- Cream ..... 1 tbsp.
- Tea

TABLE XXI

Protein ..... 50 grams	Fat ..... 64 grams
Carbohydrate .. 36 grams	Calories . 948

Breakfast
- Orange ..... 100 grams
- Egg 1
- Egg white 1
- Tomatoes ..... 100 grams
- Butter ..... 5 grams
- Cream ..... 2 tbsp.
- Coffee

Dinner

Broth
Roast veal..... 75 grams
Squash..... 50 grams
Parsnips.....100 grams
Cabbage.....100 grams
Butter..... 10 grams
Cream..... 2 tbsp.
Tea

Supper

Egg..... 1
Egg white..... 1
Squash..... 50 grams
Carrots.....200 grams
Butter..... 5 grams
Cream..... 2 tbsp.
Tea

TABLE XXII

Protein.....51 grams Fat..... 90 grams
Carbohydrate..37 grams Calories.1197

Breakfast

Egg..... 1
Peas.....100 grams
Butter..... 5 grams
Cream..... 1 ounce
Coffee

Dinner

Broth
Lamb chops.....100 grams
Asparagus.....100 grams
Beet greens.....100 grams
Butter..... 5 grams
Cream..... 1 ounce
Tea

Supper

Egg..... 1
Cauliflower.....120 grams
Lima beans..... 50 grams
Radishes..... 50 grams
Butter..... 5 grams
Cream..... 1 ounce
Tea

TABLE XXIII

Protein.....51 grams Fat..... 101 grams
Carbohydrate..35 grams Calories.1301

Breakfast

Orange.....100 grams
Bacon.....100 grams
Carrots.....100 grams
Butter..... 10 grams
Cream..... 1 tbsp.
Coffee

Dinner

Broth
Halibut.....100 grams
Lettuce..... 50 grams
Cucumbers.....100 grams
Cabbage.....100 grams
Tomatoes.....100 grams
Butter..... 10 grams
Tea

Supper

Eggs..... 2
Onions.....100 grams
Orange.....100 grams
Butter..... 10 grams
Cream..... 1 tbsp.
Tea

TABLE XXIV

Protein.....61 grams	Fat..... 42 grams
Carbohydrate..25 grams	Calories.743

Breakfast

Grapefruit..... 75 grams
Eggs..... 2
Celery.....100 grams
Coffee, black

10 A.M.

Grapefruit..... 75 grams

Dinner

Broth
Cod or haddock.....100 grams
Tomatoes.....100 grams
Tea

Supper

Lamb chop.....100 grams
Cauliflower.....120 grams
Tea

TABLE XXV

Protein.....62 grams	Fat..... 41 grams
Carbohydrate..31 grams	Calories.763

Breakfast

Orange..... 75 grams
Eggs..... 2
Carrots.....100 grams
Cream.....One-half ounce
Coffee

Dinner

Pork chop..... 75 grams
Brussels sprouts.....100 grams
Peas..... 75 grams
Butter..... 5 grams
Tea

Supper

Roast chicken.....100 grams
Lettuce..... 50 grams
Cucumbers.....100 grams
Orange..... 75 grams
Cream..... 1 tbsp.
Tea

TABLE XXVI

Protein.....60 grams Fat..... 41 grams
Carbohydrate..35 grams Calories.770

Breakfast

Grapefruit..... 75 grams
Eggs..... 2
Parsnips.....100 grams
Butter..... 5 grams
Cream..... 1 tbsp.
Coffee

Dinner

Broth
Roast veal.....100 grams
Onions.....100 grams
Beets.....100 grams
Cabbage.....100 grams
Cream..... 1 tbsp.
Tea

Supper

Broiled chicken..... 50 grams
Peas..... 50 grams
Grapefruit..... 75 grams
Butter..... 5 grams
Cream..... 1 tbsp.
Tea

TABLE XXVII

Protein.....60 grams Fat..... 68 grams
Carbohydrate..36 grams Calories.1026

Breakfast
- Orange ..... 75 grams
- Broiled cod ..... 70 grams
- Bacon ..... 50 grams
- Spinach ..... 100 grams
- Cream ..... 1 tbsp.
- Coffee

Dinner
- Broth
- Steak ..... 100 grams
- Squash ..... 50 grams
- Turnips ..... 140 grams
- Tea

4 P.M.
- Orange ..... 75 grams

Supper
- Eggs 2
- Peas ..... 100 grams
- Cream ..... 1 tbsp.
- Tea

TABLE XXVIII

Protein	62 grams	Fat	90 grams
Carbohydrate	36 grams	Calories	1238

Breakfast
- Grapefruit ..... 75 grams
- Bacon ..... 50 grams
- Egg 1
- Egg white 1
- Lettuce ..... 50 grams
- Cream ..... 2 tbsp.
- Coffee

Dinner
Broth
Lamb chops....100 grams
Lima beans.... 50 grams
Celery....100 grams
Cream.... 1 tbsp.
Tea
Supper
Egg.... 1
Egg white.... 2
Lima beans.... 50 grams
Cauliflower....120 grams
Grapefruit.... 75 grams
Cream.... 1 tbsp.
Tea

TABLE XXIX

Protein.....60 grams Fat..... 115 grams
Carbohydrate..38 grams Calories.1471

Breakfast
Orange.... 75 grams
Bacon.... 50 grams
Egg.... 1
Egg white.... 1
Asparagus....100 grams
Butter
Cream
Coffee
Dinner
Roast beef....100 grams
Beets....100 grams
Carrots....100 grams
Butter
Cream
Tea

Supper

Egg	1
Egg white	2
Corn	50 grams
Orange	75 grams
Butter	
Cream	
Tea	

Allow during day:

Butter	20 grams
Cream	3 ounces

TABLE XXX

Protein	62 grams	Fat	139 grams
Carbohydrate	36 grams	Calories	1693

Breakfast

Orange	75 grams
Bacon	100 grams
Egg	1
Asparagus	100 grams
Butter	
Cream	
Coffee	

Dinner

Steak	100 grams
Peas	100 grams
Cucumbers	100 grams
Butter	
Cream	
Tea	

Supper
- Egg 1
- Canned salmon ..... 50 grams
- Parsnips ..... 100 grams
- Tomatoes ..... 100 grams
- Orange ..... 75 grams
- Butter
- Cream
- Tea

Allow during day:
- Butter ..... 40 grams
- Cream ..... 2 ounces

TABLE XXXI

Protein ..... 71 grams	Fat ..... 40 grams
Carbohydrate .. 30 grams	Calories . 795

Breakfast
- Grapefruit ..... 75 grams
- Eggs 2
- Cauliflower ..... 120 grams
- Black coffee

Dinner
- Roast lamb ..... 100 grams
- Onions ..... 100 grams
- Celery ..... 100 grams
- Deviled eggs 2
- Tea

Supper
- Cold roast beef ..... 60 grams
- Oysters ..... 100 grams
- Tomatoes ..... 100 grams
- Grapefruit ..... 75 grams
- Tea

TABLE XXXII

Protein ..... 71 grams	Fat ..... 40 grams
Carbohydrate .. 36 grams	Calories . 810

Breakfast
- Orange....100 grams
- Eggs.... 2
- Lettuce.... 50 grams
- Cream.... 1 tbsp.
- Coffee

Dinner
- Cod or haddock....150 grams
- Cabbage....100 grams
- Peas.... 50 grams
- Tea

Supper
- Eggs.... 2
- Beets....100 grams
- American cheese.... 10 grams
- Orange....100 grams
- Cream.... 1 tbsp.
- Tea

TABLE XXXIII

Protein.....70 grams Fat..... 65 grams
Carbohydrate..35 grams Calories.1031

Breakfast
- Grapefruit.... 75 grams
- Eggs.... 2
- Spinach....100 grams
- Cream.... 1 tbsp.
- Coffee

Dinner
- Roast lamb....100 grams
- Cauliflower....120 grams
- Squash.... 50 grams
- Butter.... 5 grams
- Cream.... 1 tbsp.
- Tea

Supper
Cold chicken..... 75 grams
Eggs..... 2
Onions.....100 grams
Celery.....100 grams
Grapefruit..... 75 grams
Cream..... 1 tbsp.
Tea

TABLE XXXIV

Protein.....60 grams Fat..... 90 grams
Carbohydrate..36 grams Calories.1267

Breakfast
Apple..... 50 grams
Eggs..... 2
Egg white..... 1
Tomato.....100 grams
Butter, cream, coffee

Dinner
Lean roast beef.....100 grams
Brussels sprouts.....100 grams
Lettuce..... 50 grams
Snow pudding, made of:
1 egg white — 2 tablespoons orange juice
1 level teaspoon gelatine — 5 tablespoons water
1 tablespoon lemon juice — one-half grain saccharine
Butter, cream, tea

Supper
Eggs..... 1
Bacon.....100 grams
Asparagus.....100 grams
Onions.....100 grams
Apple..... 50 grams
Butter, cream, tea

Allow during day:
Butter..... 20 grams
Cream..... 2 ounces

TABLE XXXV

Protein	70 grams	Fat	117 grams
Carbohydrate	34 grams	Calories	1514

Breakfast

Orange	150 grams
Bacon	100 grams
Eggs	2
Turnips	140 grams
Cream	1 tbsp.
Butter	5 grams
Coffee	

Dinner

Steak	100 grams
Carrots	100 grams
String beans	100 grams
Butter	5 grams
Cream	1 tbsp.
Tea	

Supper

Eggs	2
Dried beef	25 grams
Cucumbers	100 grams
Lettuce	50 grams
Orange	100 grams
Cream	1 tbsp.
Tea	

TABLE XXXVI

Protein	72 grams	Fat	139 grams
Carbohydrate	35 grams	Calories	1732

Breakfast

Apple	50 grams
Bacon	50 grams
Eggs	2
Asparagus	100 grams
Cream	2 tbsp.
Butter	5 grams
Coffee	

Dinner

Lamb chops.....100 grams
Peas.....100 grams
Radishes..... 50 grams
Coffee jelly, made with
1 teaspoon gelatine
8 teaspoons coffee
one-half grain saccharine
Cream..... 1 tbsp.
Butter..... 5 grams
Tea

Supper

Bacon..... 50 grams
Eggs..... 2
Beet greens.....100 grams
Apple..... 50 grams
Cream..... 1 tbsp.
Butter..... 10 grams
Tea

TABLE XXXVII

Protein.....71 grams Fat..... 151 grams
Carbohydrate..36 grams Calories.1843

Breakfast

Orange.....100 grams
Bacon..... 50 grams
Eggs..... 2
Celery, cooked.....100 grams
Butter, cream, coffee

Dinner

Boiled ham.....100 grams
Cabbage.....100 grams
Beets.....100 grams
Lemon sponge made of
1 level teaspoon gelatine 6 tbsp. water
2 tablespoons lemon juice 2 egg whites
three-quarters grain saccharine
Butter, cream, tea

Supper
- Eggs 2
- Tomatoes ..... 100 grams
- Parsnips ..... 100 grams
- Orange ..... 100 grams
- Butter, cream, tea

Allow during day:
- Cream ..... 4 ounces
- Butter ..... 40 grams

TABLE XXXVIII

Protein ..... 71 grams — Fat ..... 48 grams
Carbohydrate .. 40 grams — Calories . 1832

Breakfast
- Grapefruit ..... 75 grams
- Eggs 2
- Bacon ..... 75 grams
- Spinach ..... 100 grams
- Butter, cream, coffee

Dinner
- Roast chicken ..... 100 grams
- Cucumbers ..... 100 grams
- Peas ..... 100 grams
- Butter, cream, tea

Supper
- Cold tongue ..... 25 grams
- Eggs 2
- Tomatoes ..... 100 grams
- Olives ..... 25 grams
- Grapefruit ..... 75 grams
- Butter, cream, tea

Allow during day:
- Butter ..... 40 grams
- Cream ..... 3 ounces

TABLE XXXIX

Protein.....72 grams Fat..... 152 grams
Carbohydrate..47 grams Calories.1900

Breakfast

Apple.....100 grams
Steak.....100 grams
String beans.....100 grams
Butter, cream, coffee

Dinner

Lean roast beef.....100 grams
Corn..... 50 grams
Beet greens.....100 grams
Lettuce..... 50 grams
Oil.....one-half tbsp.
Butter, cream, tea

Supper

Bacon.....100 grams
Cold chicken..... 50 grams
Cabbage..... 50 grams
Corn..... 50 grams
Butter, cream, tea

Allow during day:

Butter..... 40 grams
Cream..... 3 ounces

TABLE XL

Protein.....71 grams Fat..... 146 grams
Carbohydrate..50 grams Calories.1853

Breakfast

Orange.....100 grams
Bacon..... 50 grams
Eggs..... 2
Carrots.....100 grams
Butter, cream, coffee

Dinner
- Steak.....100 grams
- Cauliflower.....120 grams
- Potatoes.....100 grams
- Butter, cream, tea

Supper
- Eggs..... 3
- Onions.....100 grams
- Coffee jelly made with one tbsp. of gelatine, 8 tbsp. coffee, one-half grain saccharine, 3 whole walnut meats
- Orange.....100 grams
- Butter, cream, tea

Allow during day:
- Butter..... 40 grams
- Cream..... 3 ounces

TABLE XLI

Protein.....71 grams	Fat..... 152 grams
Carbohydrate..55 grams	Calories.1926

Breakfast
- Grapefruit.....150 grams
- Bacon.....100 grams
- Eggs..... 1
- Spinach.....100 grams
- Butter, cream, coffee

Dinner
- Lamb chop.....100 grams
- Potato.....100 grams
- Cabbage.....100 grams
- Lettuce..... 50 grams
- Butter, cream, tea

Supper
- Eggs..... 2
- Asparagus.....100 grams
- Milk..... 7 ounces
- Butter, cream, tea

Allow during day:
Butter..... 15 grams
Cream..... 3 ounces

TABLE XLII

Protein.....69 grams Fat..... 153 grams
Carbohydrate..61 grams Calories. 1955

Breakfast
Strawberries.....100 grams
Eggs..... 2
String beans.....100 grams
Potato..... 50 grams
Butter, cream, coffee

Dinner
Broiled ham.....100 grams
Potato..... 50 grams
Cucumbers.....100 grams
Lettuce..... 50 grams
Butter, cream, tea

Supper
Eggs..... 2
Canned salmon..... 50 grams
Cauliflower.....120 grams
Rhubarb.....100 grams
Butter, cream, tea

Allow during day:
Butter..... 40 grams
Cream..... 6 ounces
Lemon juice three and a half ounces

TABLE XLIII

Protein.....80 grams Fat..... 53 grams
Carbohydrate..35 grams Calories. 964

Breakfast
- Orange....100 grams
- Eggs.... 2
- Tomatoes....100 grams
- Cream.... 1 tbsp.
- Coffee

Dinner
- Lean roast beef....125 grams
- Celery....100 grams
- Spinach....100 grams
- Lemon snow pudding, made of one egg white, tbsp. of lemon juice, tbsp. of water
- Tea

Supper
- Cold tongue.... 50 grams
- Eggs.... 2
- Beets....100 grams
- Cream.... 1 tbsp.
- Tea

Allow during day:
- Lemonade made with three tbsp. lemon juice water and saccharine to taste

TABLE XLIV

Protein.....81 grams	Fat..... 75 grams
Carbohydrate..36 grams	Calories.1177

Breakfast
- Grapefruit.... 75 grams
- Eggs.... 2
- Carrots....100 grams
- Cream.... 2 tbsp.
- Coffee

Dinner
Cod or haddock.....150 grams
Onions.....100 grams
Peas..... 75 grams
Cream..... 1 tbsp.
Tea
Supper
Cold roast pork..... 50 grams
Eggs..... 2
Lettuce..... 50 grams
Grapefruit..... 75 grams
Cream..... 1 tbsp.
Tea
Allow during day:
Butter..... 25 grams

TABLE XLV

Protein.....80 grams Fat..... 101 grams
Carbohydrate..35 grams Calories.1410
Breakfast
Apple..... 50 grams
Eggs..... 2
Egg white..... 1
String beans.....100 grams
Butter..... 10 grams
Cream..... 2 tbsp.
Coffee
Dinner
Hamburger steak.....100 grams
Brussels sprouts.....100 grams
Fresh tomatoes.....100 grams
Butter..... 10 grams
Cream..... 2 tbsp.
Tea

Supper

Eggs	2
Egg white	1
Cold ham	50 grams
Cucumbers	100 grams
Radishes	50 grams
Turnips	140 grams
Apple	50 grams
Butter	10 grams
Cream	2 tbsp.
Tea	

TABLE XLVI

Protein	80 grams	Fat	127 grams
Carbohydrate	38 grams	Calories	1661

Breakfast

Orange	75 grams
Eggs	2
Lettuce	50 grams
Butter	
Cream	2 tbsp.
Coffee	

10 A.M.

Orange	75 grams

Dinner

Steak	100 grams
Beets	100 grams
Cream cheese	50 grams
Olives	25 grams
Butter	
Cream	2 tbsp.
Tea	

Supper
Cold veal..... 50 grams
Celery.....100 grams
Eggs..... 2
Fresh pineapple..... 75 grams
Butter
Cream..... 2 tbsp.
Tea
Allow during day:
Butter..... 40 grams

TABLE XLVII

Protein.....80 grams Fat..... 154 grams
Carbohydrate..35 grams Calories.1903

Breakfast
Grapefruit..... 75 grams
Eggs..... 2
Tomatoes.....100 grams
Butter..... 10 grams
Cream..... 2 tbsp.
Coffee

Dinner
Lamb chops.....100 grams
Peas..... 50 grams
Squash..... 50 grams
Butter..... 20 grams
Cream..... 2 tbsp.
Tea

Supper
Cold boiled ham.....100 grams
Eggs..... 2
Egg white..... 1
Lettuce..... 50 grams
Olive oil.....one and a half tbsp.
Grapefruit..... 75 grams
Cream..... 2 tbsp.
Tea

TABLE XLVIII

Protein.....80 grams Fat..... 171 grams
Carbohydrate..35 grams Calories.2062

Breakfast
Apple..... 50 grams
Eggs..... 2
Asparagus.....100 grams
Butter, cream, coffee

Dinner
Roast chicken.....100 grams
Cabbage.....100 grams
Spinach.....100 grams
Fresh peach.....100 grams
Butter, cream, tea

Supper
Eggs..... 2
Sardines.....100 grams
Celery..... 50 grams
Apple..... 50 grams
Butter, cream, tea

Allow during day:
Butter..... 40 grams
Cream..... 6 ounces
Olive oil..... 1 tbsp.

The following food values may be found in bulletin No. 28, 1906, United States Department of Agriculture:

Food stuffs raw	*Quantity*	*Protein grams*	*Fat grams*	*Carbohydrate grams*	*Total calories*
Beef	100 grams	22	28	0	350
Chicken	100 grams	32	4	0	168
Raw bacon	100 grams	10	64	0	636
Fish	100 grams	20	7	0	147
Oysters	100 grams	6	1	3	46
Eggs	100 grams	13	12	0	165

Food stuffs raw	*Quantity*	*Protein grams*	*Fat grams*	*Carbo-hydrate grams*	*Total calories*
Egg (one)	One	7	6	0	84
Butter	100 grams	1	85	0	795
Cheese (American)	100 grams	28	35	2	448
Cheese (Neufchatel)	100 grams	19	27	2	337
Milk (whole)	100 grams	3	4	5	70
Milk (skim)	100 grams	3	0.3	5	35
Milk (skim)	one quart	31	3	46	343
Cream (gravity)	100 grams	3	16	5	181
Cream (gravity)	one pint	12	73	23	822
Oatmeal (cooked)	100 grams	3	0.5	12	166
Rice (cooked)	100 grams	3	0.1	24	112
Macaroni (cooked)	100 grams	3	0.1	24	112
Bread	100 grams	9	1	53	264
Soda crackers	100 grams	10	9	73	424
Cake average	100 grams	6	9	63	367
Asparagus	100 grams	2	1	3	30
Beans (dried)	100 grams	22	2	59	350
String beans (cooked)	100 grams	1	1	2	22
Beets, raw	100 grams	2	0.1	7	37
Cabbage, raw	100 grams	2	0.3	6	35
Carrots, raw	100 grams	1	0.4	9	45
Cauliflower, raw	100 grams	2	0.5	5	33
Celery, raw	100 grams	1	0.1	3	17
Corn, green	100 grams	3	1	20	103
Cucumbers, raw	100 grams	0.8	0.2	3	17
Lettuce, raw	100 grams	1	0.3	3	19
Mushrooms, raw		3	0.4	7	45
Onions, raw	100 grams	1	0.3	10	48
Peas, dried	100 grams	24	1	62	362
Potatoes, white	100 grams	2	0.1	18	83
Potatoes, sweet	100 grams	2	0.7	27	125
Spinach	100 grams	2	0.3	3	23
Squash	100 grams	1	0.5	9	46

Food stuffs raw	*Quantity*	*Protein grams*	*Fat grams*	*Carbohydrate grams*	*Total calories*
Tomatoes	100 grams	0.9	0.4	4	24
Turnips	100 grams	1	0.2	8	39
Apples	100 grams	0.4	0.5	14	64
Bananas	100 grams	1	0.6	22	100
Blackberries	100 grams	1	1	11	59
Cherries	100 grams	0.1	1	15	71
Cranberries	100 grams	0.4	0.6	10	48
Currants	100 grams	1	0	13	57
Figs (dried)	100 grams	4	0.3	74	323
Grapes	100 grams	1	1	14	71
Huckleberries	100 grams	0.6	0.6	16	74
Lemon juice	100 grams	0	0	10	41
Muskmelons	100 grams	0.6	0	9	39
Oranges	100 grams	0.8	0.2	11	50
Peaches	100 grams	0.7	0.1	9	41
Pears	100 grams	0.6	0.5	14	65
Prunes	100 grams	2	0	73	308
Raisins	100 grams	2	3	76	348
Pineapple	100 grams	0.4	0.3	10	45
Plums	100 grams	1	0	20	86
Raspberries	100 grams	1	0	12	53
Strawberries	100 grams	1	0.6	7	38
Almonds	100 grams	21	54	17	658
Peanuts	100 grams	25	38	24	554
Chocolate	100 grams	13	48	30	623
Whiskey	50 C.C.	Contains 43% alcohol			152
Lager beer	250 C.C.	Contains 4.5% alcohol			130

30 grams (1 ounce)	*Carbohydrate grams*	*Protein grams*	*Fat grams*	*Calories*
Oatmeal	20	5	2	120
Cream 40%	1	1	12	120
Cream 20%	1	1	6	60
Milk	1.5	1	1	20

30 grams (1 ounce)	*Carbohydrate grams*	*Protein grams*	*Fat grams*	*Calories*
Brazil nuts	2	5	20	210
Oysters, six	4	6	1	50
Meat (uncooked lean)	0	6	3	50
Meat (cooked lean)	0	8	5	75
Bacon	0	5	15	155
Egg (one)	0	6	6	75
Vegetables (5% group)	1	0.5	0	6
Vegetables (10% group)	2	0.5	0	10
Potato	6	1	0	30
Bread	18	3	0	90
Butter	0	0	25	225
Fish (cod, haddock, cooked)	0	6	0	25
Broth	0	0.7	0	3
Small orange, or one half Grape fruit	10	0	0	40

One gram of protein yields 4.1 calories
One gram of carbohydrate yields 4.1 calories
One gram of fat yields 9.3 calories
One kilogram equals 2.2 pounds
30 grams or cubic centimeters equals one ounce.
A patient at rest requires 25 calories per kilogram of body weight

	Protein grams	*Fat grams*	*Carbohydrate grams*	*Total calories*
Bacon, raw, four slices, 6 in. by 2 in	10	64	0	636
Bacon, cooked, four slices, 6 in. by 2 in	10	32	0	338
Beef, roast, one slice, 4 in. by 2 in	6	7	0	89
Egg, one medium size, 50 grams	7	6	0	84
Oysters, 6 large	6	1	3	46
Butter, one and a quarter in. cube, 25 grams	0	21	0	195

	Protein grams	*Fat grams*	*Carbohydrate grams*	*Total calories*
Cream (Neufchatel) cheese, piece, two and a half by one and a half, by one and a quarter in	16	23	1	284
Cream (gravity), 16%, 1 glass, 7 oz	5	32	10	359
Milk, whole, one glass, 7 oz	6	8	9	136
Bread, one slice, 30 grams	3	0.5	16	81
Rice, boiled, one tablespoon, 50 grams	1	0	12	56
Oatmeal (boiled), 1 tablespoon, 50 grams	1	0	6	33
Potato, size of large egg 100 grams	2	0	18	83
Grape fruit, 300 grams	2	0	30	131
Orange, 150 grams	1	0	13	57

Below will be found the approximate quantities to be found in 100 gram portions

Asparagus—8 or 9 stalks 4 inches long.
Beans (string) (cut in small pieces)—2 heaping tablespoons.
Bacon—4 slices 6 inches long, 2 inches wide.
Cabbage (cooked)—2 heaping tablespoons.
Cauliflower—2 rounding tablespoons.
Celery— 6 pieces four and a half inches long.
Cheese—a piece four inches by one and a half by one inch.
Cucumbers—12 slices one-eighth inch, one-half inch in diameter.
Greens (spinach, kale, etc.)—2 heaping tablespoons.
Lettuce—10-12 medium sized leaves.
Olives—25 small olives.
Onions—2 onions size of an egg.
Peas—2 heaping tablespoons.
Potatoes (baked)—one small potato size of an egg.
Potatoes (mashed)—2 rounding tablespoons.
Sardines—28 sardines—1 small box.

Salmon—one-quarter can.
Tomatoes—2 heaping tablespoons.
Tomatoes, fresh—one medium sized tomato, two inches in diameter.

Other Weights

1 tablespoon olive oil	13 grams
1 tablespoon Mayonnaise	21 grams
1 thin slice of bread	25 grams
1 medium sized orange	150 grams
1 peach	125 grams
1 medium sized apple	150 grams
One-half small grapefruit	150 grams
1 medium sized lamb chop, with bone	100 grams
1 medium slice of cold tongue	25 grams
1 slice tenderloin steak, 1 in. thick	100 grams
1 average helping of fish	100 grams
1 average helping of butter	10 grams
1 average sized egg	50 grams
1 average helping of boiled cereal	100 grams
1 potato, size of a large egg	100 grams

CHAPTER XIII

THE USE AND ABUSE OF ALCOHOL

Unfortunately our laws have been amended so that alcohol is neither manufactured nor sold: however this important therapeutic agent is deserving of our discussion, from the viewpoint of its use and abuse by the diabetic.

It is my firm belief, which is founded on practical experience, that alcohol if taken properly is of great benefit to the patient suffering from diabetes mellitus. Much medical literature has been written on its use pro and con, but I feel the consensus of the best medical opinion is in favor of its administration.

Alcohol like all other foods may be taken in excess producing symptoms of poisoning, with resultant harmful effects on the tissues of the body. It is for this reason our government has prohibited its manufacture: in other words, the harm done by those guilty of indiscretion in its use has more than overbalanced its medicinal worth.

Alcohol is readily oxidized by the human body if

taken as a medicinal agent, being completely burned up, and transformed into heat and energy, which is so essential to the diabetic, who is unable to take care of carbohydrates, the only other foodstuff which is able to produce in sufficient amount these two important adjuncts necessary to the maintenance of life. One gram of alcohol yields approximately seven calories, while the highest fat will produce is nine. In view of the fact that fat must be limited to a certain extent, it becomes necessary to introduce into the organism another agent which is capable of supplying the body needs. Alcohol is the ideal substitute; in that it is entirely oxidized, leaving no by-products which are harmful to metabolism in general. Aside from this it acts as a sparer of body fat, thus preventing acidosis with loss of body weight.

The stimulating qualities of alcohol are known to all. It also possesses the property of elevating or at least maintaining body temperature, which is so important to the successful carrying on of body function. Many authors claim alcohol first stimulates, then depresses. In my mind the slight depression that does follow the ingestion of alcohol is so slight as compared with its stimulating power, that it is not worthy of note. It must be understood that this only holds good when the drug is taken in medicinal doses.

The dosage is dependent on the individual needs of the patient. Usually an adult may safely take from three to three and a half ounces daily in divided doses, and well diluted with water. Children are best treated by the administration of a teaspoonful in a glass of water three times daily. If the diabetic patient has always been accustomed to its use, and has been in the habit of taking it in unreasonable quantity, it is advisable to diminish the quantity slowly so as not to suddenly disrupt the metabolic equilibrium.

If the patient's diet consists of more than 1500 calories daily, alcohol is unnecessary: If below this amount it may be relied upon to produce extra heat units or calories without influencing the tolerance.

Alcohol in the form of whiskey or brandy is the only product allowed the diabetic. Beer, ale, porter, stout, wines, cordials, etc., are absolutely forbidden, and should never be indulged in without the physician's action on the matter.

CHAPTER XIV

CONCLUSION

In conclusion I wish to impress you with these few thoughts regarding diabetes: their consideration is worthy of thought, and should be appreciated by those who suffer from the malady.

The diabetic is fortunate in that he is afflicted with a disease that does respond to sensible treatment. Although an individual may have diabetes, in the light of present day methods of treatment, he should be able to continue to lead a useful existence indefinitely, if he follow the instruction of a careful, intelligent, sensible medical attendant, who is able to appreciate the individual mechanism of each case. Diabetics can not, and must not be treated collectively. Each case needs personal treatment, as each and every case is different from the other, and what is meat and raiment for one is poison to another. For this reason I am not in the habit of taking any more cases than I can attend to in a thorough manner conducive to the health of my patients.

The observance of a few *don'ts* means life insurance to those afflicted. What yesterday was considered a hopeless case, to-day takes on a different aspect. The diabetic fortunately may keep in direct touch with his own condition: by experience he is taught what to eat and what not to eat. The better the understanding of the malady by the patient, the better for the patient. Ignorance is never bliss in diabetes. Knowledge is health.

It is my custom to treat each and every diabetic according to the personal needs of the case. I never consider diabetes generally, by that I mean that each case presents different characteristics which must be treated differently if maximum results are to be obtained. The diabetic must not be treated dogmatically. Each symptom must be accurately analyzed, as each case differs from the other as night from day, and unless the physician is able and capable of interesting himself in each case personally, he has no right to treat the patient with a hope of recovery.

I have made it a practice to limit the number of cases I see and talk with daily for this reason, and since instituting this procedure my results have become evident, and my patients happier, healthier and more thankful.